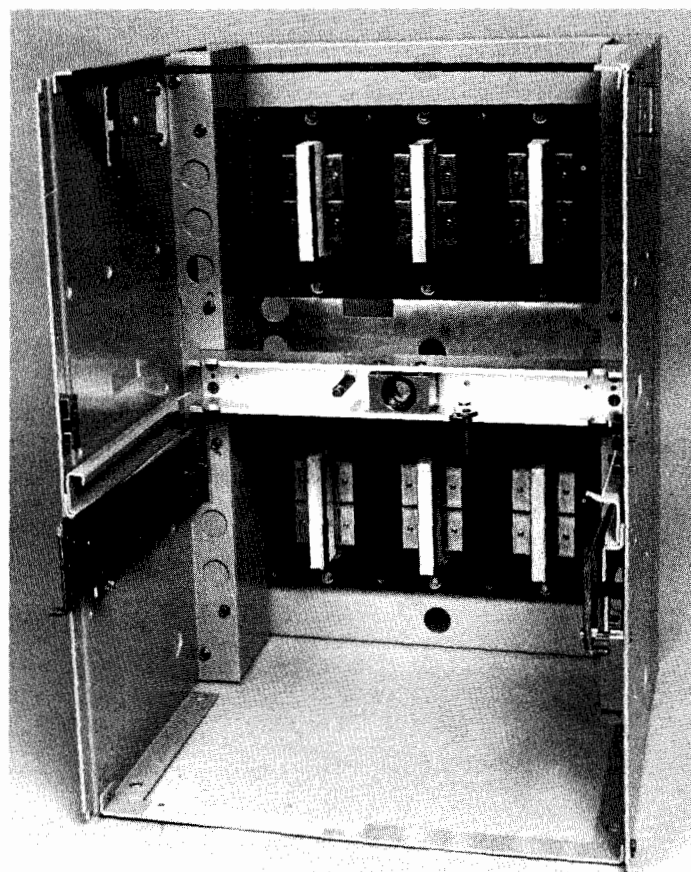
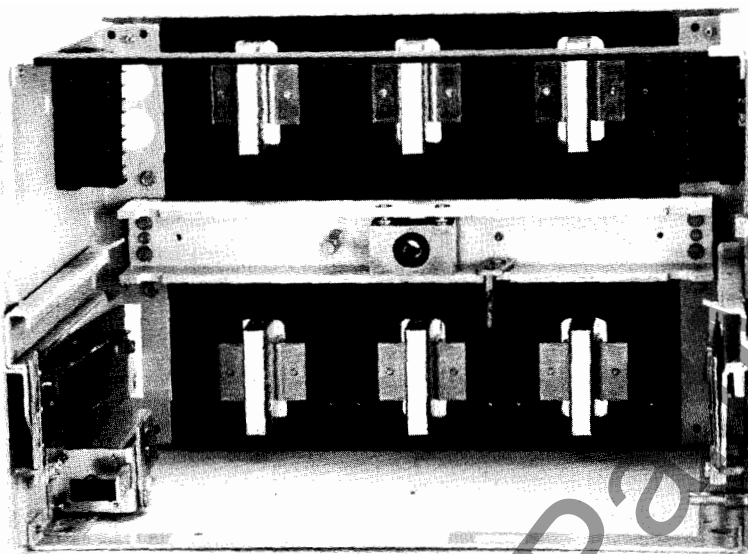




Power Break® II Circuit Breakers

Draw-Out Substructure, 800–4000 Ampere



www.ElectricalPartManuals.com

Power Break® II Circuit Breakers

Draw-Out Substructure Installation

Description

The Power Break® II Draw-Out Substructure is a self-contained frame serving as a stationary receptacle for type SSD and SHD draw-out breakers, with appropriate catalog numbers listed in Table 1. The draw-out feature permits activation of a new feeder, rapid replacement of a circuit breaker, and inspection and maintenance of Power Break II insulated-case draw-out circuit breakers without the necessity for de-energizing the entire switchboard.

The substructure is designed for convenient mounting in separate compartments in a switchboard, with holes provided for bolting on a shelf or supports. Holes are also provided in the primary receivers for bolting to bus bars or terminal lugs.

Draw-Out Breaker	Substructure
SSD08B2##	SPSDOS08
SHD08B2##	SPHDOS08
SSD16B2##	SPSDOS16
SHD16B2##	SPHDOS16
SSD20B220	SPSDOS20
SHD20B220	SPHDOS20
SSD25B##	SPSDOS25
SHD25B##	SPHDOS25
SSD30B3##	SPSDOS30
SHD30B3##	SPHDOS30
SSD40B4##	SPSDOS40
SHD40B4##	SPHDOS40

Table 1. Catalog numbers of draw-out breakers and corresponding substructures.

Features

The features described below are illustrated in Figures 1, 2, 3 and 4.

Rails. The substructure has 17-inch-long retractable rails on which the breaker rolls in and out. To operate, pull the rails out until they drop into the horizontal locked position. The breaker can be mounted either flush with or protruding from the compartment door. The substructure rails provided are suitable for flush mounting. For mounting with the breaker front protruding, order the optional short-rail kit, catalog number SPRAILS.

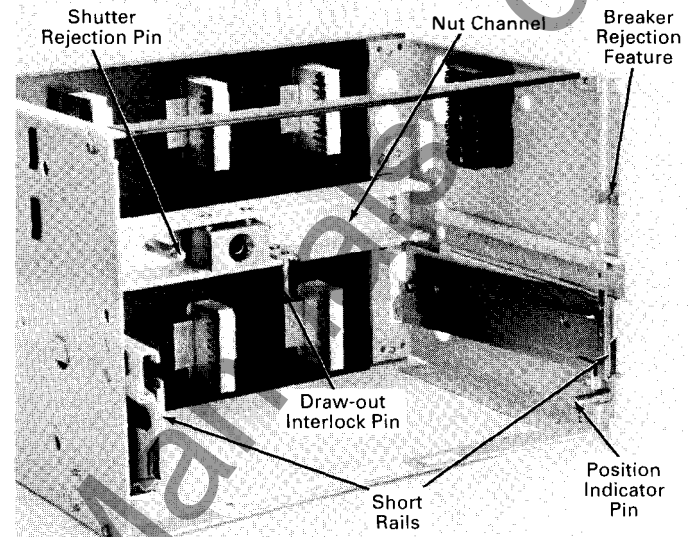


Figure 1. Interior of Draw-Out Substructure for small-frame breaker with short-rail kit, catalog number SPRAILS, installed.

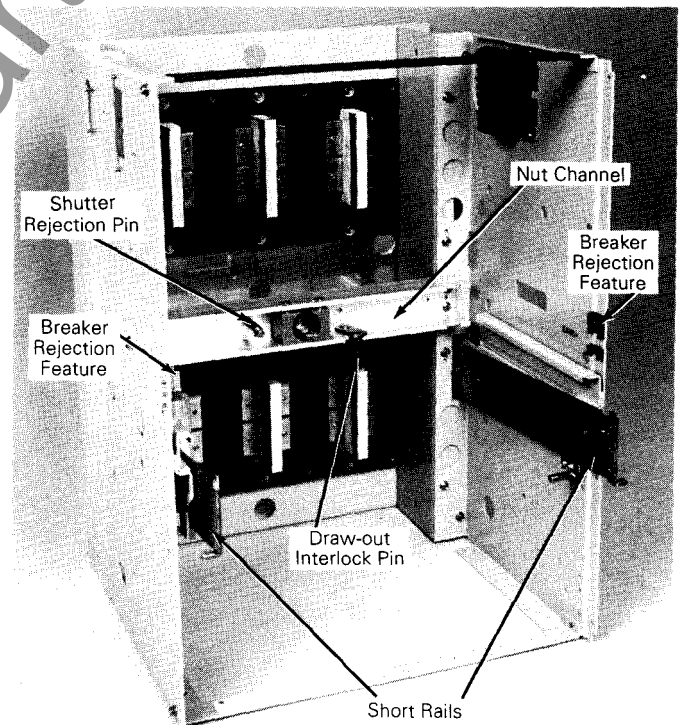


Figure 2. Interior of Draw-Out Substructure for large-frame breaker with short-rail kit, catalog number SPRAILS, installed.

Draw-Out Substructure Installation

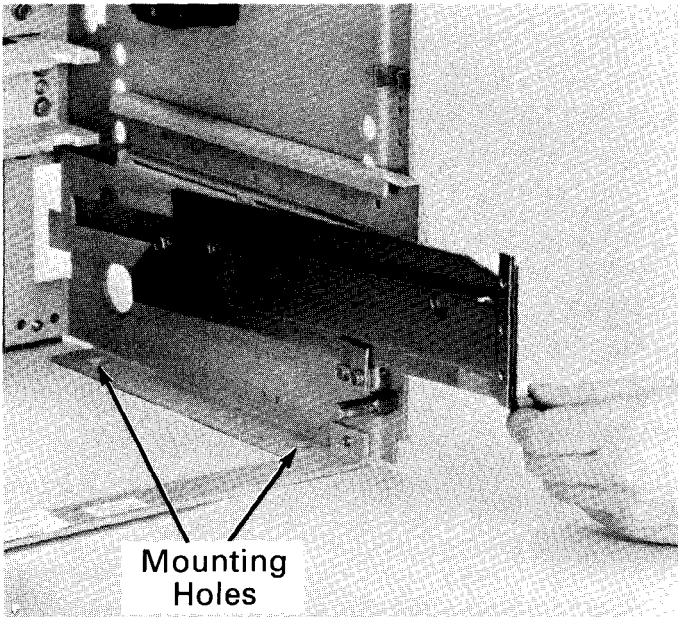


Figure 3. Pulling out the substructure rail.

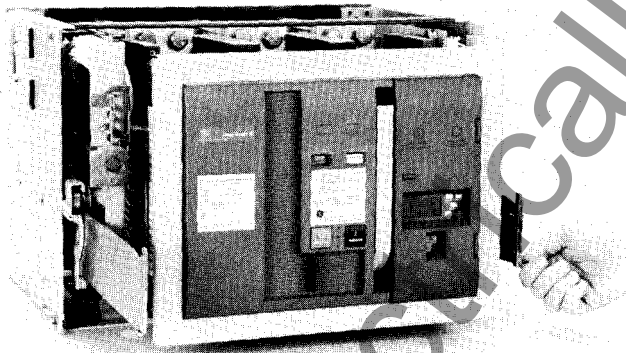


Figure 4. Substructure rail in fully extended position.

Breaker Rejection Features. These features prevent insertion of a breaker into an incorrect substructure. See Table 1 or the label on the breaker for the proper substructure catalog number for that breaker.

Draw-Out Interlock Pin. This feature trips a closed circuit breaker if the wrench interlock is deliberately defeated. The breaker is tripped before the primary disconnects part as the breaker is racked out and

before the primary disconnects engage as the breaker is racked in.

Draw-Out Position Indicator Pin. This pin actuates a compartment position indicator on the breaker.

Shutter Rejection Pin. This pin prevents the installation of an incorrect shutter.

Installation

Place the substructure on a rigid, leveled shelf or appropriate support. Install four 1/2-inch bolts, nuts, and lock washers through the mounting holes shown in Figure 3, but do not tighten. Check the squareness of the substructure sides relative to the switchboard front and to the aluminum nut channel. Square up and then tighten the mounting bolts on each side to a torque of 35–40 ft-lb. Connect the bus work or terminal lugs to the primary receivers using the holes provided. Use 1/2-inch grade-5 bolts, Belleville washers, and nuts and torque the bolts to 35–40 ft-lb. Busbars and/or cables should be adequately supported so that they do not distort the substructure.

Accessories

This section contains descriptions of the optional accessories that can be ordered for field installation into the Draw-Out Substructure.

Secondary Disconnects

Control wiring is connected to draw-out secondary disconnects mounted to the sides of the substructure. Two substructure disconnects, catalog number SPDOSD36S, must be ordered for each substructure. The screw terminals on each disconnect block accept either bare wire or ring or spade terminals.

Up to 72 control circuits may be connected through 36-position sliding plug-style secondary disconnect blocks factory-mounted to each side of the breaker. All auxiliary switch wires exit to a stationary terminal block mounted through the left-side wall of the breaker top cover. Numbered terminals on the terminal block correspond to the same numbered

Power Break® II Circuit Breakers

Draw-Out Substructure Installation

terminals on the left-side draw-out secondary disconnect block.

All motor operator, closing, tripping, and trip unit functions are wired through the right-side stationary terminal block and then to the right-side draw-out secondary disconnect block.

Control signals are only available at the breaker when it is in the TEST or CONNECTED position.

Bypass Switch

The Bypass Switch is available with normally open (NO) and normally closed (NC) contacts that change state when the breaker moves between the TEST and CONNECTED positions. The switch is available with 4, 8, or 12 circuits, of which half are NO and half NC. Table 2 lists the switch configurations and catalog number for each variant.

The switch contacts are rated at 10 A at 600 Vac, 0.75 A at 125 Vdc, and 0.25 A at 250 Vdc.

Terminals	Catalog Number		
	TDOB2L	TDOB4L	TDOB6L
NC	1-2	1-2	1-2
	3-4	3-4	3-4
		5-6	5-6
		7-8	7-8
			9-10 11-12
NO	5-6	9-10	13-14
	7-8	11-12	15-16
		13-14	17-18
		15-16	19-20
			21-22 23-24

Table 2. Switch configurations for the available Bypass Switch variants.

Use the following procedure to install the Bypass Switch.

WARNING: Remove all sources of power to the substructure during installation of the Bypass Switch to prevent possible injury.

AVERTISSEMENT: Coupez toutes les alimentations de puissance du berceau pendant l'installation du contact de position afin d'éviter toute blessure éventuelle.

1. Locate the barrier, shown in Figure 5, installed in the substructure at the factory.
2. Position the Bypass Switch inside the barrier, as shown in Figure 6, and line up the mounting holes.
3. Fasten the switch with the two 1/4-inch thread-forming screws supplied, as shown in Figure 6, and torque to 80–90 in-lb.
4. Snap the supplied grommets into the 1 1/4-inch diameter holes in the rear of the substructure, shown in Figure 5, to protect the wires.
5. Wires must be grouped and tied on each side of the switch, as shown in Figure 6, to prevent the barrier from being pushed up into the path of the retractable rail.

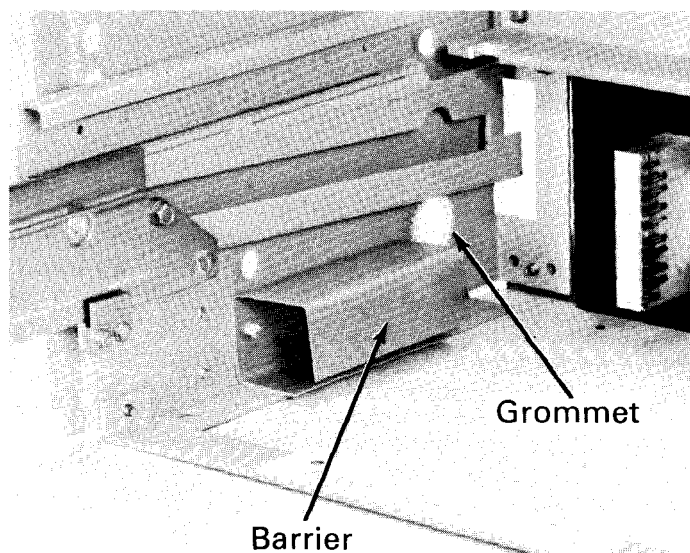


Figure 5. Bypass Switch barrier on the inside of the substructure.

Power Break® II Circuit Breakers

Draw-Out Substructure Installation

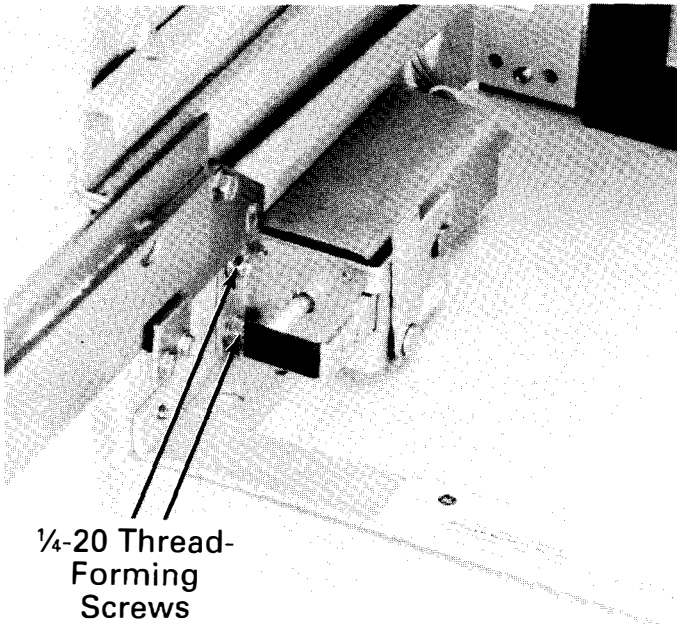


Figure 6. Bypass Switch fully installed.

Shutters in 800-2000 A Substructure

Shutters are available to protect installation and service personnel from inadvertently contacting the primary stabs of an energized switchboard when the draw-out breaker is removed. Catalog number SPDSS20 fits substructures SPSDOS08, SPHDOS08, SPSDOS16, SPHDOS16, SPSDOS20, and SPHDOS20.

Use the following procedure to install the Shutters.

WARNING: Remove all sources of power to the substructure during installation of the Shutters to prevent possible injury.

AVERTISSEMENT: Couper toutes les alimentations de puissance du berceau pendant l'installation des volants d'isolement afin d'éviter toute blessure éventuelle.

WARNING: Do not attempt to install a catalog number TDOSS08 shutter into the substructures listed in these instructions. This combination presents an extremely hazardous condition. This shutter does not open wide enough to allow an SSD or SHD breaker to safely enter and leave the substructure. A pin located toward the left side of the aluminum nut channel rejects installation of shutters other than the correct shutter, catalog number SPDSS20. Do not tamper with this rejection feature.

AVERTISSEMENT: Ne pas essayer d'installer un volet d'isolement-référence TDOSS08 dans un des berceaux énumérés dans ces instructions. Cette association présente un danger. Ce volet n'ouvre pas assez large pour permettre un disjoncteur SSD ou SHD d'être embroché ou débrosché. Un goujon situé sur le côté gauche du profilé en aluminium au fond du berceau interdit l'installation de tout volet autre que le volet référence SPDSS20.

1. Align the captive mounting screws, located in the middle of each shutter side frame, with the tapped holes in the nut channel, as shown in Figure 7. Tighten the screws to a torque of 27-32 in-lb.

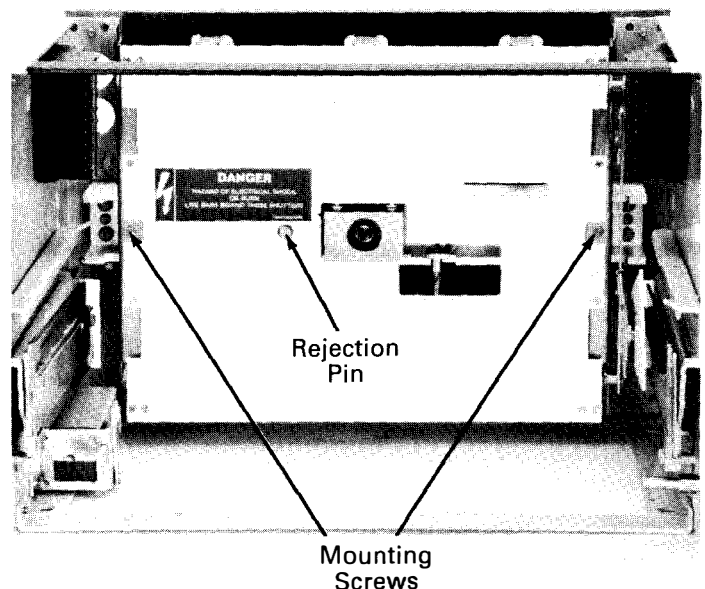


Figure 7. Closed shutters installed in 800-2000 A substructure.

Draw-Out Substructure Installation

2. Push down on the actuating lever, shown in Figure 8, to check that the upper and lower movable barriers operate properly. When the lever is released, the barriers should return to their closed positions.
3. Place the draw-out breaker on the extended rails and push the breaker into the compartment. As the breaker enters the compartment, the shutter opens to allow contact with the primary disconnects.

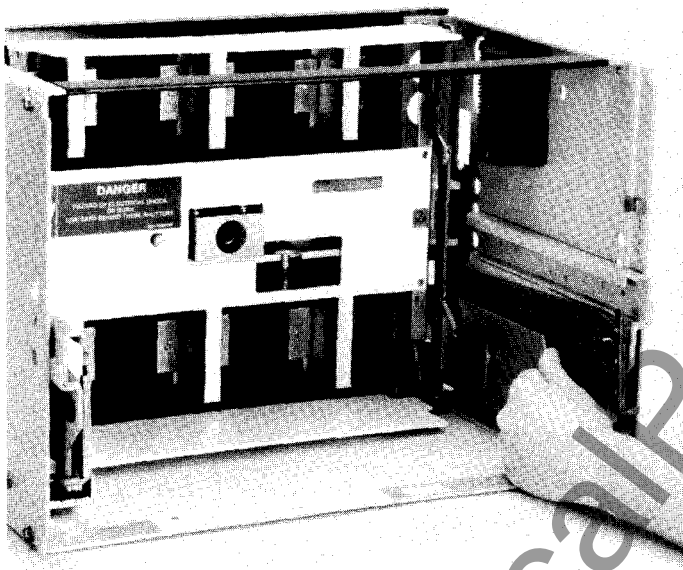


Figure 8. Shutter actuating lever pushed down to open the shutters.

Shutters in 2500–4000 A Substructure

Shutters are available to protect installation and service personnel from inadvertently contacting the primary stabs of an energized switchboard when the draw-out breaker is removed. Catalog number SPDSS30 fits substructures SPSDOS25, SPHDOS25, SPSDOS30, and SPHDOS30. Catalog number SPDSS40 fits substructures SPSDOS40 and SPHDOS40.

Use the following procedure to install the Shutters.

WARNING: Remove all sources of power to the substructure during installation of the Shutters to prevent possible injury.

AVERTISSEMENT: Couper toutes les alimentations de puissance du berceau pendant l'installation des volets d'isolement afin d'éviter toute blessure éventuelle.

WARNING: Do not attempt to install a catalog number TDOSS08 shutter into the substructures listed in these instructions. This combination presents an extremely hazardous condition. This shutter does not open wide enough to allow an SSD or SHD breaker to safely enter and leave the substructure. A pin located toward the left side of the aluminum nut channel rejects installation of shutters other than the correct shutter, catalog number SPDSS20 or SPDSS40. Do not tamper with this rejection feature.

AVERTISSEMENT: Ne pas essayer d'installer un volet d'isolement-référence TDOSS08 dans un des berceaux énumérés dans ces instructions. Cette association présente un danger. Ce volet n'ouvre pas assez large pour permettre un disjoncteur SSD ou SHD d'être embroché ou débroché. Un goujon situé sur le côté gauche du profilé en aluminium au fond du berceau interdit l'installation de tout volet autre que le volet référence SPDSS30 ou SPDSS40.

1. Align the captive mounting screws, located in the middle of each shutter side frame, with the tapped holes in the nut channel, as shown in Figure 9. An additional captive screw on the right side of the substructure must be fastened to the right compartment side. Tighten the screws to a torque of 27–32 in-lb.
2. Push down on the operating lever to check that the upper and lower movable barriers operate freely, as shown in Figures 10 and 11. When the lever is released, the barriers should return to their closed positions.
3. Place the draw-out breaker on the extended rails and push the breaker into the compartment. As the breaker enters the compartment, the shutter opens to allow contact with the primary disconnects.

Power Break® II Circuit Breakers

Draw-Out Substructure Installation

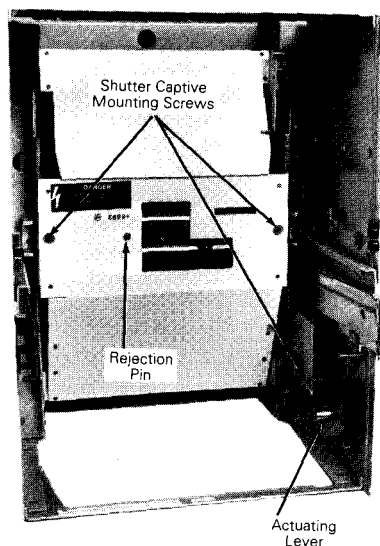


Figure 9. Closed shutters installed in 2500-4000 A substructure.

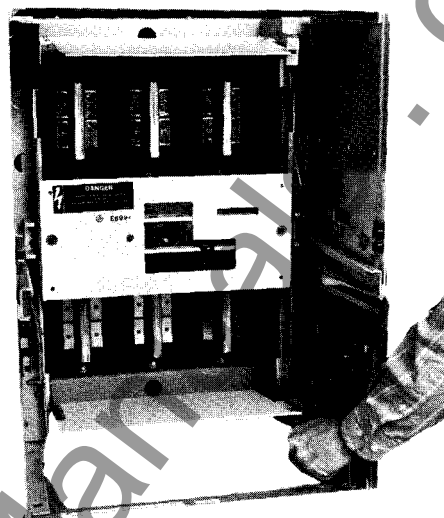


Figure 11. Shutter actuating lever pushed down to fully open the shutters.

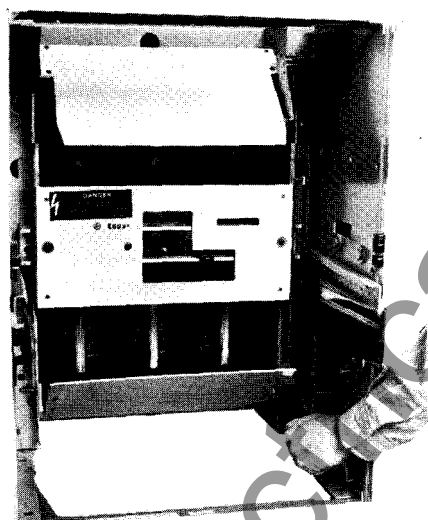


Figure 10. Shutter actuating lever pushed down to partly open the shutters.

These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency that may be met in connection with installation, operation, or maintenance. Should further information be desired or should particular problems arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to the GE Company.



GE Electrical Distribution & Control

General Electric Company
41 Woodford Ave., Plainville, CT 06062

© 1996 General Electric Company

GEH-6272A 0396